

BIOGRAPHICAL SKETCH

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|---|---------|---|------------------------|
| NAME | | POSITION TITLE | |
| Handfield, Martin | | Associate Professor of Oral Biology, Tenured & Director, Research & Development, Oragenics. | |
| eRA COMMONS USER NAME handfield | | | |
| EDUCATION/TRAINING | | | |
| INSTITUTION AND LOCATION | DEGREE | YEAR(s) | FIELD OF STUDY |
| Laval University, Quebec City, Canada | B.Sc. | 1992 | Biochemistry |
| Laval University, Quebec City, Canada | M.Sc. | 1993 | Clinical Microbiology |
| Laval University, Quebec City, Canada | Ph.D. | 1997 | Molecular Pathogenesis |
| University of Florida, Gainesville, Florida | Postdoc | 1998 | Molecular Pathogenesis |

A. Positions and Honors.**Positions and Employment**

1990 Technician, Laboratoire de l'Environnement LCQ.
1991-93 Research assistant, National Institute for Scientific Research (INRS-eau)
1992 Laboratory Assistant Instructor, Laval University
1994 Visiting fellow, University of Calgary
1996 Visiting fellow, University of Calgary
1998 Postdoctoral fellow, University of Florida
1999 Assistant Scientist, University of Florida
2000 Assistant Professor, University of Florida
2006- Tenured Associate Professor, University of Florida
2009- Director, Research & Development. Oragenics, Inc.

Other Experience and Professional Memberships

1993- Member, American Society for Microbiology
1998- Member, International Association of Dental Research
1999- Member, The Mark Wilson Conference (Oral Immunology/Microbiology Research Group)
2000-6 Co-Founder and Director of iviGene Corp., Alachua, FL
2001-3 Co-Founder and Director of Epicure Corp., Alachua, FL
2003-6 Member, UFCD Research Committee (Chair in 2004-5)
2004-6 Member, Health Sciences Center Conduct Committee
2005- Member, UFCD Admission Committee
2006- Member, American Dental Education Association
2006-8 Scientific Advisory Board Member and Consultant for GeneEx, Inc.
2006-8 Consultant for Oragenics, Inc.

Honors

- 1992-3 M.Sc. fellow, FCAR
1994 Studentship for training abroad, FCAR
1994-7 Ph.D. scholar, Laval University.
1994-7 Ph.D. scholar, FCAR (Fond pour la formation de Chercheurs et l'Aide à la recherche).
1994-8 Ph.D. scholar, Canadian Cystic Fibrosis Foundation.
1996 Advanced Bacterial Genetics course, Cold Spring Harbor Laboratory. CSH Scholar.

Patents

- US Patent Serial No. 7,052,860 (May 30, 2006). Identification of *Actinobacillus actinomycetemcomitans* Antigens for Use in the Diagnosis, Treatment, and Monitoring of Periodontal Diseases.
US Patent Application Serial No. 60/147,551, Microbial Polynucleotides Expressed During Infection of a Host.
US Patent Application Serial No. 60/463,819, *Vibrio cholera* Proteins Expressed During Infection.
US Patent Application Serial No. 10/915,002, Identification Of *Porphyromonas Gingivalis* Antigens For Use In The Diagnosis, Treatment And Monitoring Of Periodontal Diseases.

B. Selected peer-reviewed publications (from a total of 42, in chronological order)

1. **Handfield, M.**, and R.C. Levesque. 1999. Strategies for Isolation of *In Vivo* Expressed Genes from Bacteria. FEMS Microbiol. Rev., 23:69-91.
2. **Handfield, M.**, Brady, J., Progulske-Fox, A., and J.D. Hillman. 2000. IVIAT: a Novel Method to Select for Bacterial Genes Induced Specifically in Human Infections. Trends Microbiol. 8:336-339.
3. **Handfield, M.**, Seifert, T., and J.D. Hillman. 2002. *In vivo* expression of bacterial genes during human infections. Methods Mol Med 71:225-42. PMID: 12374023.
4. Cheng, S.L., Clancy, C.J., Checkley, M.A., **Handfield, M.**, Hillman, J.D., Progulske-Fox, A., Lewin, A.S., Fidel, P.L. and M.H. Nguyen, 2003. Identification of *Candida albicans* genes induced during thrush offers insight into pathogenesis. Mol. Microbiol., 48:1275-1288. PMID: 12787355.
5. Kim, Y.R., Lee, S.E., Kim, C.M., Kim, S.Y., Shin, E.K., Chung, S.S. Progulske-Fox, A., Hillman, J.D., **Handfield, M.**, and J.H. Rhee. 2003. Identification of Putative *Vibrio vulnificus* *In Vivo*-Expressed Virulence Factors by the *In Vivo* Induced Antigen Technology (IVIAT). Infect. Immun. 71:5461-71. PMID: 14500463.
6. Hang, L., John, M., Asaduzzaman, M., Bridges, E.A., Vanderspurt, C., Qadri, F., Kim, T.J., Taylor, R.K., Hillman, J.D., Progulske-Fox, A., **Handfield, M.**, Ryan, E.T. and S.B. Calderwood. 2003. Use of *In vivo*-induced antigen technology (IVIAT) to identify genes uniquely expressed during human infection with *Vibrio cholerae*. PNAS 100:8508-8513. PMID: 12826608.
7. Rollins, S.M., Peppercorn, A., Hang, L., **Handfield, M.**, Stephen Calderwood, S.B., and E.T. Ryan. 2005. *In vivo* induced antigen technology (IVIAT). Cell. Microbiol. 7:1-9. PMID: 15617518.
8. John, M., Kudva, I.T., Griffin, R.W., Dodson, A., McManus, B., Krastins, B., Sarracino, D., Progulske-Fox, A., Hillman, J.D., **Handfield, M.**, Tarr, P.I., and Calderwood, S.B. 2005. Identification of *Escherichia coli* O157:H7 proteins expressed specifically during human infection using *in vivo* induced antigen technology (IVIAT). Infect. Immun. 73:2665-2679. PMID: 15845468.
9. **Handfield, M.**, Progulske-Fox, A. and Hillman, J.D. 2005. *In Vivo* Induced Antigens of Oral Pathogens. Periodontology 2000 38:123-134. PMID: 15853939.
10. **Handfield, M.**, Mans, J., Zheng, G., Lopez, M.C., Song, M., Progulske-Fox, A., Narasimhan, G., Baker, H.V. and Lamont, R.J. 2005. Distinct Expression Profiles Characterize Oral Epithelium-Microbiota Interactions. Cell. Microbiol., 7:811-823. PMID: 15888084.
11. Salim, K.Y., Chang, P., Bast, D., **Handfield, M.**, Hillman, J.D., de Azavedo, J.C. and D. Cvitkovitch. 2005. Identification of *In Vivo* Induced Antigenic Determinants of Group A Streptococcus. Infect. Immun., 73:6026-6038. PMID: 16113323.
12. Harris, JB, A Baresch-Bernal, SM Rollins, A Alam, RC LaRocque, M Bikowski, AF Peppercorn, SB Calderwood, **M Handfield**, JD Hillman, D Sack, F Qadri, E Hohmann, RF Breiman, WA Brooks, ET

- Ryan. 2006. Identification of *in vivo*-induced bacterial protein antigens during human infection with *Salmonella enterica* serovar Typhi. Infect. Immun. 74:5161-8. PMID: 16926408.
13. Mans, J.J., Lamont, R.J., and **Handfield, M.** 2006. Analysis of epithelial host responses to microbial interaction using transcriptional profiling. Infect Disord Drug Targets 6: 299-309. PMID: 16918488.
14. **Handfield M.**, and J.D. Hillman. 2006. *In vivo* induced antigen technology (IVIAT) and change-mediated antigen technology (CMAT). Infect Disord Drug Targets 6: 327-334. PMID: 16918490.
15. Hasegawa, Y., Jeffrey J. Mans, Song Mao, M. Cecilia Lopez, Henry V. Baker, **Martin Handfield**, Richard J. Lamont. 2007. Characteristics of Gingival Epithelial Cell Transcriptional Responses to Commensal Oral Microbial Species. Infect. Immun. 75:2540-7. PMID: 17307939.
16. Mao, S., Y. Park, Y. Hasegawa, G.D. Tribble, C.E. James, **M. Handfield**, M.F. Stavropoulos, Ö. Yilmaz and R.J. Lamont. 2007. Intrinsic apoptotic pathways of gingival epithelial cells modulated by *Porphyromonas gingivalis*. Cell. Microbiol. 9:1997-2007. PMID: 17419719.
17. Hasegawa, Y., G.D. Tribble, H.V. Baker, J.J. Mans, **M. Handfield**, R.J. Lamont. 2008. Role of the *P. gingivalis* SerB Protein in Gingival Epithelial Cell Cytoskeletal Remodeling and Cytokine Production. Infect. Immun. 76:2420-7. PMID: 18391005
18. Rollins, SM, Amanda Peppercom, John Young, Melissa Drysdale, Andrea Baresch, Margaret Bikowski, David Ashford, Conrad Quinn, **Martin Handfield**, Jeffrey Hillman, Rick Lyons, Theresa Koehler, Stephen B. Calderwood, Edward T. Ryan. 2008. Application of *in vivo* induced antigen technology (IVIAT) to *Bacillus anthracis*. pLOS Pathogens. 19:e1824. PMID: 18350160
19. **Handfield, M.**, H.V. Baker and R.J. Lamont. 2008. Beyond Good and Evil in the Oral Cavity: Insights into Host-Microbe Relationships Derived from Transcriptional Profiling of Gingival Cells. 2008. Crit Rev Oral Biol Med (J Dent Res) 87:203:223. PMID: 18296603. NIHMSID: 89336.
20. Demmer, R.T., JH Behle, DL Wolf, **M. Handfield**, M. Kebschull, R. Celenti, P. Pavlidis and PN Papapanou. 2008. Transcriptomes in Healthy and Diseased Gingival Tissues. J. Periodontol. 79:2112-2124. PMID: 18980520. NIHMSID: 89340.
21. Young C, Sharma R, **Handfield M**, Mai V, Neu J. 2009. Biomarkers for Infants at Risk for Necrotizing Enterocolitis: Clues to Prevention? Pediatr Res. Jan 28. PMID: 19190533.
22. Mans JJ, K Von Lackum, S Willis, C Dorsey, SM Wallet, HV Baker, RJ Lamont, and **M Handfield**. 2009. The degree of microbiome complexity influences the epithelial response to infection. BMC Genomics 10(1):380. PMID: 19689803.
23. Papapanou, Panos N, Jan H Behle, Moritz Kebschull, Romanita Celenti, Dana L Wolf, **Martin Handfield**, Paul Pavlidis and Ryan Demmer. Subgingival bacterial colonization profiles correlate with gingival tissue gene expression. BMC Microbiol. 2009 Oct 18;9:221. PMID: 19835625.
24. Meka A, Bakthavatchalu V, Sathishkumar S, Lopez MC, Verma RK, Wallet SM, Bhattacharyya I, Boyce BF, **Handfield M**, Lamont RJ, Baker HV, Ebersole JL, Kesavalu L. 2010. *Porphyromonas gingivalis* infection-induced tissue and bone transcriptional profiles. Mol Oral Microbiol. 2010 Feb;25(1):61-74. PMID: 20331794.
25. Chung, J, Wallet, SM and **M. Handfield**. 2010. Identification of Virulence Determinants of Microbial Pathogens by *In Vivo* Induced Antigen Technology. Methods in Molecular Microbiology. In press.
26. Wallet, SM and **M. Handfield**. *In Vivo* Induced Antigen Technology (IVIAT): Identification of Virulence Factors of *Aggregatibacter actinomycetemcomitans*. Methods in Molecular Microbiology. Accepted per Invitation.
27. Peter E. Kima, J. Alfredo Bonilla, Eumin Cho, Blaise Ndjamen, Jonathan Canton, Nicole Leal and **Martin Handfield**. Identification of *Leishmania* proteins preferentially released in infected cells using *In Vivo* Induced Antigen Technology (IVIAT). Accepted in PLOS Neglected Diseases.
28. **Handfield, M.**, T. Cram, S. Wallet, M. John and J.D. Hillman. Mycobacterial *in vivo* induced antigens in tuberculosis. In preparation for PNAS.

C. Research Support.

Ongoing Research Support

RO1 DE16715 (Handfield) 02/21/06-01/31/11
NIH-NIDCR
Epithelium-Microbe Interactions Dissected with Arrays.
The objective of this study is to characterize the transcriptional profile of human epithelial cells infected with *A. actinomycetemcomitans* and *P. gingivalis*.
Role: PI

R01 HD059143 (Neu) 7/1/2008-6/30/2013
NIH
Intestinal Microecology, Inflammatory Markers and Necrotizing Enterocolitis.
The purpose of this project is to develop genomic and proteomic markers of NEC.
Role: Consultant

FCPRAC (Triplet, Oragenics as subcontractor) 3/1/2009-2/29/2011
Florida Citrus Production Research Advisory Council
Integrative approaches to discover pathogenesis-associated proteins from the causal agent of citrus greening disease
Role: co-I

Pending

RO1 DE014372 (Hackett)
NIH/NIDCR
Proteomics of *P. gingivalis* interactions with *F. nucleatum* and *S. gordonii*.
The aim of this project is to develop proteomic approaches to study host-pathogen interactions.
Role: Consultant

Completed Research Support (3 years)

RO1 DE13545 (Progulske-Fox) 6/01/05-01/31/10
NIH-NIDCR
Interactions Between Oral Pathogens and Vascular Cells.
The goal of this study is to study the host and pathogen interactions between *P. gingivalis* and endothelial cells.
Role: Consultant
1P01AI61537 (Nguyen) 05/17/04-04/16/09
NIH/NIAID
Mycology Research Unit: *In Vivo* Induced Fungal Antigens.
The objective of this Center Project is to expand the applicability of IVIAT to an array of medically-relevant mycoses.
Role: Co-I (grant moved to U. Penn.)

1 RO1 DE13957 (Progulske-Fox) 04/01/02 - 03/31/07
NIH/NIDCR
In Vivo Antigen Technology for Analysis of *Porphyromonas gingivalis*.
The major goals of this project are to adapt IVIAT to study the pathogenesis of *Porphyromonas gingivalis* in oral infections.
Role: Co-I